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This document is part of a software package that provides the capability to conformance test the Department of Defense suite of upper level protocols including: Internet Protocol (IP) Mil-Std 1777, Transmission Control Protocol (TCP) Mil-Std 1778, File Transfer Protocol (FTP) Mil-Std 1780, Simple Mail Transfer Protocol (SMTP) Mil-Std 1781 and TELNET Protocol Mil-Std 1782.

See p 1

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DEFENSE COMMUNICATIONS AGENCY

UPPER LEVEL PROTOCOL TEST SYSTEM

FILE TRANSFER PROTOCOL MIL-STD 1780
TEST TRACEABILITY INDEX

MAY 1988

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Comments

Comments or questions about this software product and documentation can
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                               1360 Wiehle Ave
                               Reston, VA 22090-5500
                               ATTN: Protocol Test System Administrator

FILE TRANSFER PROTOCOL (FTP)

MIL-STD-1780

TRACEABILITY MATRIX

This Traceability Matrix provides information on the derivation, organization, and function of the tests specified for FTP within the protocol test system.

This document is divided into five sections:

- FTP TRACEABILITY INDEX;
- FTP TESTS INDEX;
- FTP CODES INDEX;
- FTP TEST SENARIOS INDEX;
- FTP SCENARIOS AND TESTS DESCRIPTIONS.

FTP TRACEABILITY INDEX: FTP TEST NUMBERS versus FTP MIL-STD-1780 REFERENCES . . .

This table indicates the cross-reference between the Test Scenarios and the applicable section in MIL-STD-1780 regarding each required function, operation, option, mode, response, or state.

NOTE. .

Although the Test Numbers in the USER scenarios replicate the Test Numbers in the SERVER scenarios a common Test Number does not indicate equivalent, complementary, or corresponding tests.

**FTP TEST INDEX: FTP TEST NUMBERS versus FTP
Commands/Primitives/Options/Modes . . .**

This table shows the FTP Test Numbers which may be regarded as
the "principal tests" of each FTP Command or Primitive and/or
Option or Mode.

**FTP TEST SCENARIOS INDEX: FTP TEST SCENARIOS versus FTP TEST
NUMBERS**

This table shows, for each FTP Test Number, the UNIX filenames of
the FTP test Scenario Files in which it appears.

FTP SCENARIO AND TEST DESCRIPTIONS

This section provides a brief narrative of the scope and
objectives of each FTP test Scenario File and a narrative or
graphic operational description of each FTP Test Number.

SECTION 1 - FTP TRACEABILITY INDEX

User FTP

The following table indicates which sections of MIL-STD-1780 are addressed by which User FTP tests.

MIL-STD-1780 Reference	Test Numbers
5.7.1.1.1, 5.7.1.1.2, 5.7.1.1.3	1, 36
5.7.1.1.4	11
5.7.1.1.5	2, 39
5.7.2.1	38
5.7.2.2	37
5.7.2.3, 5.7.2.4, 5.7.2.5	17-34
5.7.3.1, 5.7.3.2	16-34
5.7.3.3	3
5.7.3.4	4
5.7.3.6	5
5.7.3.7	6
5.7.3.8	12
5.7.3.9	10
5.7.3.10	9
5.7.3.11	7
5.7.3.12	8
5.7.3.13	14
5.7.3.14	13
5.7.3.15	15
5.7.3.16	35

Server FTP

The following table indicates which sections of MIL-STD-1780 are addressed by which Server FTP tests.

MIL-STD-1780 Reference	Test Numbers
5.7.1.1.1	2, 34, 37
5.7.1.1.2	3, 36, 37
5.7.1.1.3	4, 35
5.7.1.1.4	17, 44
5.7.1.1.5	5, 73
5.7.2.1	72
5.7.2.2	72, 74
5.7.2.3, 5.7.2.4, 5.7.2.5	26-31, 51-54
5.7.3.1, 5.7.3.2	25-31, 33, 49 64, 66, 70, 72
5.7.3.3	6, 7, 38, 56
5.7.3.4	8, 9,
5.7.3.6	10, 39, 60, 62
5.7.3.7	11, 60, 63
5.7.3.8	18, 45, 65
5.7.3.10	16, 43, 57
5.7.3.11	15, 42
5.7.3.12	12, 13, 40, 58
5.7.3.13	14, 41, 59
5.7.3.14	22, 47, 68
5.7.3.15	19, 20, 21, 46, 69
5.7.3.16	23, 24, 48, 67
5.7.3.17	32, 55

SECTION 2 - FTP TEST INDEX

User FTP

The following table indicates which User FTP tests are to be regarded as the "principal tests" of the listed FTP capabilities.

Test Number	Purpose
1	Connection establishment and login (USER, PASS, ACCT commands)
2	Connection closing (QUIT command)
3	Transmission of APPE command
4	Transmission of ALLO command
5	Transmission of RNFR command
6	Transmission of RNTO command
7	Transmission of LIST command
8	Transmission of NLST command
9	Transmission of CWD command
10	Transmission of DELE command
11	Transmission of REIN command
12	Transmission of ABOR command
13	Transmission of STAT command
14	Transmission of SITE command
15	Transmission of HELP command
16	File transfer (default transfer params: SFA)
17	File transfer (explicit SFA)
18	File transfer (explicit SFE)
19	File transfer (explicit SFI)
20	File transfer (explicit SRA)
21	File transfer (explicit SRE)
22	File transfer (explicit SRI)
23	File transfer (explicit BFA)
24	File transfer (explicit BFE)
25	File transfer (explicit BFI)
26	File transfer (explicit BRA)
27	File transfer (explicit BRE)
28	File transfer (explicit BRI)
29	File transfer (explicit CFA)
30	File transfer (explicit CFE)
31	File transfer (explicit CFI)
32	File transfer (explicit CRA)
33	File transfer (explicit CRE)
34	File transfer (explicit CRI)

Test Number	Purpose
35	Transmission of NOOP command
36	Second connection establishment and login (USER, PASS, ACCT)
37	Switch connection, PASV command
38	Switch connection, PORT command
39	Ability to close connection to first reference (QUIT command)

Server FTP

The following table indicates which Server FTP tests are to be
regarded as the "principal tests" of the listed FTP capabilities.

Test Number	Purpose
1	Connection establishment
2	Response to USER command
3	Response to PASS command
4	Response to ACCT command
5	Response to QUIT command
6	Response to APPE command
7	Response to APPE to nonexistent file
8	Response to ALLO command without record option
9	Response to ALLO command with record option
10	Response to RNFR command
11	Response to RNTO command
12	Response to LIST command with file parameter
13	Response to LIST command without parameter
14	Response to NLST command
15	Response to CWD command
16	Response to DELE command
17	Response to REIN command
18	Response to ABOR command
19	Response to STAT command without parameter
20	Response to STAT command with directory param
21	Response to STAT command with file parameter
22	Response to SITE command
23	Response to HELP command
24	Response to HELP command with parameter
25	File transfer (default transfer params: SFA)
26	File transfer (explicit SFA)
27	File transfer (explicit SFI)
28	File transfer (explicit SFE)
29	File transfer (explicit SRA)
30	File transfer (explicit SRI)
31	File transfer (explicit SRE)

Test Number	Purpose
32	Response to NOOP command
33	Response to STOR command when not logged in
34	Response to unknown User
35	Response to out-of-sequence ACCT command
36	Response to out-of-sequence PASS command
37	Response to known User and incorrect Password
38	Response to incorrect APPE command
39	Response to RNFR of nonexistent file
40	Response to incorrect LIST command
41	Response to incorrect NLST command
42	Response to CWD to nonexistent directory
43	Response to DELE of nonexistent file
44	Response to unimplemented REIN command
45	Response to unimplemented ABOR command
46	Response to unimplemented STAT command
47	Response to unimplemented SITE command
48	Response to HELP command with unknown parameter
49	Response to incorrect STOR command
50	Response to incorrect RETR command
51	Response to incorrect STRU command
52	Response to incorrect TYPE command
53	Response to incorrect MODE command (Block)
54	Response to incorrect MODE command (Compressed)
55	Response to command syntax error
56	Response to APPE command corruption
57	Response to DELE command corruption
58	Response to LIST command corruption
59	Response to NLST command corruption
60	Response to Rename command sequence corruption
61	Response to RETR command corruption
62	Response to RNFR command corruption
63	Response to RNTO command corruption
64	Response to STOR command corruption
65	Response to ABOR command corruption
66	Verifcation of file transfer via checksum - STOR
67	Response to HELP command corruption
68	Response to SITE command corruption
69	Response to STAT command corruption
70	File transfer over multiple connections
71	Establishment of multiple connections
72	Three-way file transfer
73	Response to QUIT command in three-way context
74	Response to unimplemented PASV command

SECTION 3 – FTP TEST SCENARIO INDEX

User FTP

The following table indicates which tests are contained within each User FTP test scenario file.

Test Number	Scenario Name
1	BASIC
2	
3	FILE_SERVICE
4	
5	
6	
7	
8	
9	
10	
11	CONN_SERVICE
12	
13	
14	
15	
16	FILE_XFER
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	

Test Number	Scenario Name
36	THREE_WAY
37	
38	
39	

Server FTP

The following table indicates which tests are contained within
each Server FTP test scenario file.

Test Number	Scenario Name
1	BASIC
2	
3	
4	
5	
6	FILE_SERVICE
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
38	
39	
40	
41	
42	
43	
17	CONN_SERVICE
18	
19	
20	
21	
22	
23	
24	
44	
45	
46	
47	
48	

Test Number	Scenario Name
25	FILE_XFER
26	
27	
28	
29	
30	
31	
32	
49	
50	
51	
52	
53	
54	
33	NO_LOGIN
34	
35	
36	
37	
55	GEN_ERROR
56	C_FILE_SERVICE
57	
58	
59	
60	
61	
62	
63	
66	
64	
65	C_CONN_SERVICE
67	
68	
69	
70	C_FILE_XFER
71	C_MULTI_CONN
72	THREE_WAY
73	
74	

SECTION 4 - FTP SCENARIO AND TEST DESCRIPTIONS

User FTP

This section summarizes the scope and objectives of each User FTP
test scenario and describes the operational characteristics of
each test within each scenario.

==

Scenario BASIC

Scenario BASIC tests the User FTP IUT's ability to establish an
FTP command connection, perform the login command sequence, and
close the command connection. These capabilities are fundamental
to FTP operation; the IUT must pass these tests before any other
scenarios are executed.

TEST 1:   ESTABLISH CONNECTION AND LOGIN (USER, PASS, ACCT)

Can the Implementation Under Test (IUT) establish a connection to
the Reference (REF) and successfully perform a login command
sequence?

 ACTION: Instruct the IUT to open a connection to the REF. If
           successful, instruct the IUT to perform a login
           sequence (i.e., issue the USER, PASS, and ACCT
           commands).

 VERIFICATION: IUT receives a correct response from REF
           indicating that a connection is established.
           REF compares commands received from IUT to the correct
           command format as specified by MIL-STD-1780.

 SUCCESS: Positive connection response received by IUT.
           Connection opened. REF receives correct command format
           for each of the USER, PASS, and ACCT commands within
           the specified time interval for each command.

 FAILURE: If negative connection response is received, or either
           an incorrect command is received or timeout occurs for
           any command, failure is logged and the test exited.

TEST 2: CLOSE CONNECTION (QUIT)

Can a connection between the IUT and REF be closed by issuing a QUIT command?

ACTION: The IUT is instructed to issue the QUIT command. The REF waits 30 seconds to receive the command before timing-out.

VERIFICATION: REF receives command string and compares it to the MIL-STD specification for QUIT command.

SUCCESS: IUT sent correct command format. Connection is closed.

FAILURE: REF times-out before receiving the correct command format. Test is completed and connection is closed.

===

Scenario FILE SERVICE

Scenario FILE_SERVICE tests the User FTP IUT's ability to correctly provide the following FTP file-oriented services: Append, Allocate, Rename, List, Name List, Change Working Directory, and Delete commands.

TEST 3: APPEND (APPE) COMMAND

Can the IUT issue an APPE command?

ACTION: The IUT is instructed to issue an APPE command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

TEST 4: ALLOCATE (ALLO) COMMAND

Can the IUT issue an ALLO command?

ACTION: IUT is instructed to issue an ALLO command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

TEST 5: RENAME FROM (RNFR) COMMAND

Can the IUT issue a RNFR command?

ACTION: IUT is instructed to issue a RNFR command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

TEST 6: RENAME TO (RNTO) COMMAND

Can the IUT issue a RNTO command?

ACTION: IUT is instructed to issue a RNTO command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

TEST 7: LIST COMMAND

Can the IUT issue a LIST command?

ACTION: IUT is instructed to issue a LIST command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

TEST 8:   NAME LIST (NLST) COMMAND

Can the IUT issue a NLST command?

ACTION: IUT is instructed to issue a NLST command.

VERIFICATION: REF receives command string within 30 second time
           interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

TEST 9:   CHANGE WORKING DIRECTORY (CWD) COMMAND

Can the IUT issue a CWD command?

ACTION: IUT is instructed to issue a CWD command.

VERIFICATION: REF receives command string within 30 second time
           interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

TEST 10:   DELETE (DELE) COMMAND

Can the IUT issue a DELE command?

ACTION: IUT is instructed to issue a DELE command.

VERIFICATION: REF receives command string within 30 second time
           interval end checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

===

Scenario CONN SERVICE

Scenario CONN_SERVICE tests the User FTP IUT's ability to correctly provide the following FTP connection-oriented services: Reinitialize, Abort, Status, Site, and Remote Help commands.

TEST 11: REINITIALIZE (REIN) COMMAND

Can the IUT issue a REIN command?

ACTION: IUT is instructed to issue a REIN command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

TEST 12: ABORT (ABOR) COMMAND

Can the IUT issue a ABOR command?

ACTION: IUT is instructed to issue a ABOR command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

TEST 13: STATUS (STAT) COMMAND

Can the IUT issue a STAT command?

ACTION: IUT is instructed to issue a STAT command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

TEST 14:   SITE COMMAND

Can the IUT issue a SITE command?

ACTION: IUT is instructed to issue a SITE command.

VERIFICATION: REF receives command string within 30 second time
           interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

TEST 15:   HELP COMMAND

Can the IUT issue a HELP command?

ACTION: IUT is instructed to issue a HELP command.

VERIFICATION: REF receives command string within 30 second time
           interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

===

Scenario FILE XFER

Scenario FILE_XFER tests the User FTP IUT's ability to correctly
transfer files using the default file transfer parameters and all
possible combinations of explicitly specified transfer
parameters.   These parameters are specified in the test
descriptions below by a three character code: the first letter
specifies the file Mode (S for Stream, B for Block, C for
Compressed), the second letter specifies the file Structure (F
for File, R for Record [Page is not tested]), and the third
letter specifies the file data Type (A for ASCII, E for EBCDIC, I
for Image).

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TEST 16: FILE TRANSFER USING DEFAULT TRANSFER PARAMETERS (SFA)

Can the IUT perform the RETR and STOR commands correctly using the default transfer parameters (SFA)?

ACTION: Instruct IUT to issue the RETR command so that a test file is transferred from the REF to IUT. If REF receives correct command format within 30 seconds, ensure file transfer is complete by checking response code. When file transfer has completed, instruct IUT to issue the STOR command so that the test file is transferred back to the REF. If REF receives correct command format within 30 seconds, ensure file transfer is complete by checking response code. When file transfer has completed compare the original REF test file to the file just received by IUT.

VERIFICATION: Check the command formats for MIL-STD conformance. Compare files to ensure that the file data was not destroyed or altered while being transferred to and from the IUT.

SUCCESS: REF receives correct command formats for RETR and STOR commands. Successful file comparison to ensure correct file transfer.

FAILURE: Timeout occurs before receiving correct command format for either RETR or STOR commands or unsuccessful comparison of transferred files.

TESTS 17-34: FILE TRANSFER USING EXPLICIT TRANSFER PARAMETERS

These tests determine if the IUT can perform the RETR and STOR commands correctly using explicitly specified transfer parameters. Each test is identical except for the specific parameters used. In order, tests 17-34 use the following parameters: SFA, SFE, SFI, SRA, SRE, SRI, BFA, BFE, BFI, BRA, BRE, BRI, CFA, CFE, CFI, CRA, CRE, CRI.

ACTION: Instruct IUT to issue the appropriate MODE, STRU, and TYPE commands to establish the appropriate transfer parameters, checking the response codes along the way. Instruct IUT to issue the RETR command so that a test file is transferred from the REF to IUT. If REF receives correct command format within 30 seconds, ensure file transfer is complete by checking response code. When file transfer has completed, instruct IUT to issue the STOR command so that the test file is

transferred back to the REF. If REF receives correct command format within 30 seconds, ensure file transfer is complete by checking response code. When file transfer has completed compare the original REF test file to the file just received by IUT.

VERIFICATION: Check the command formats for MIL-STD conformance. Compare files to ensure that the file data was not destroyed or altered while being transferred to and from the IUT.

SUCCESS: REF receives correct command formats for MODE, STRU, TYPE, RETR and STOR commands. Successful file comparison to ensure correct file transfer.

FAILURE: Timeout occurs before receiving correct format for one of the commands or unsuccessful comparison of transferred files.

TEST 35: NOOP COMMAND

Can the IUT issue a NOOP command?

ACTION: IUT is instructed to issue a NOOP command.

VERIFICATION: REF receives command string within 30 second time interval and checks it for MIL-STD conformance.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30 seconds.

===

Scenario THREE WAY

Scenario THREE_WAY tests the User FTP IUT's ability to communicate with two servers at once and to issue the Pasv and Port commands.

TEST 36: SECOND CONNECTION ESTABLISHMENT AND LOGIN (USER, PASS, ACCT)

Can the IUT establish a second connection to another Reference (REF1) and successfully perform a login command sequence?

ACTION: Instruct the IUT to open a connection to the REF1. If
           successful, instruct the IUT to perform a login
           sequence (i.e., issue the USER, PASS, and ACCT
           commands).

VERIFICATION: IUT receives a correct response from REF1
           indicating that a connection is established.
           REF1 compares commands received from IUT to the correct
           command format as specified by MIL-STD-1780.

SUCCESS: Positive connection response received by IUT.
           Connection opened. REF1 receives correct command
           format for each of the USER, PASS, and ACCT commands
           within the specified time interval for each command.

FAILURE: If negative connection response is received, or either
           an incorrect command is received or timeout occurs for
           any command, failure is logged and the test exited.

TEST 37:   SWITCH CONNECTION AND PASV COMMAND

Can the IUT issue a PASV command to REF?

ACTION: Instruct the IUT to issue a PASV command to REF.

VERIFICATION: IUT receives a correct response from REF.
           REF compares commands received from IUT to the correct
           command format as specified by MIL-STD-1780.

SUCCESS: IUT sends correct command format.

FAILURE: REF does not receive correct command format within 30
           seconds.

TEST 38:   SWITCH CONNECTION AND PORT COMMAND

Can the IUT issue a PORT command to REF1?

ACTION: Instruct the IUT to issue a PORT command to REF1.

VERIFICATION: IUT receives a correct response from REF1.
           REF1 compares commands received from IUT to the correct
           command format as specified by MIL-STD-1780.

SUCCESS: IUT sends correct command format.

FAILURE: REF1 does not receive correct command format within 30
           seconds.

TEST 39: CLOSE CONNECTION TO FIRST REFERENCE

Can a connection between the IUT and REF be closed by issuing a QUIT command to REF?

ACTION: Instruct the IUT to issue a QUIT command to REF.

VERIFICATION: IUT receives a correct response from REF. REF compares commands received from IUT to the correct command format as specified by MIL-STD-1780.

SUCCESS: IUT sends correct command format. Connection is closed.

FAILURE: REF does not receive correct command format within 30 seconds.

Server FTP

This section summarizes the scope and objectives of each Server
FTP test scenario and describes the operational characteristics
of each test within each scenario.

===

Scenario BASIC

Scenario BASIC tests the Server FTP IUT's ability to establish an
FTP command connection, perform the login command sequence, and
close the command connection. These capabilities are fundamental
to FTP operation; the IUT must pass these tests before any other
scenarios are executed.

TEST 1:   ESTABLISH CONNECTION

Can the implementation under test (IUT) establish a connection
with the reference implementation (REF)?

ACTION: REF tries opening a connection to IUT.

VERIFICATION: REF receives a 220 response within 30 seconds
          indicating that command channel is open.

SUCCESS: REF receives response code of 220. Connection is
          established.

FAILURE: REF times-out waiting for correct response code from
          IUT. Connection cannot be established, scenario is
          aborted.

TEST 2:   USER COMMAND

Does the IUT correctly implement the USER command?

ACTION: REF sends the IUT the USER command and waits 30 seconds
          for IUT to respond.

VERIFICATION: REF checks for valid codes of 230, 331, or 332.

SUCCESS: REF receives one of the valid response codes.

FAILURE: REF times-out waiting for IUT to respond with a valid
           response code.   Scenario is aborted and all connections
           are closed.

TEST 3:   PASSWORD (PASS) COMMAND

Does the IUT correctly implement the PASS command?

ACTION: REF sends the IUT the PASS command and waits 30 seconds
          for IUT to respond.

VERIFICATION: REF checks for valid codes of 230 or 332.   If the
               response code 202 or 503 is received, the command is
               not implemented and the test is not evaluated for
               success or failure.

SUCCESS: REF receives one of the valid response codes.

FAILURE: REF times-out waiting for IUT to respond with a valid
           response code.

TEST 4:   ACCOUNT (ACCT) COMMAND

Does the IUT correctly implement the ACCT command?

ACTION: REF sends the IUT the ACCT command and waits 30 seconds
          for IUT to respond.

VERIFICATION: REF checks for valid code of 230.   If the response
               code 202 is received, the command is not implemented
               and the test is not evaluated for success or failure.

SUCCESS: REF receives a valid response codes.

FAILURE: REF times-out waiting for IUT to respond with a valid
           response code.

TEST 5:   CLOSE CONNECTION (QUIT)

Does the IUT correctly implement the QUIT command?

ACTION: REF sends the IUT the QUIT command and waits 30 seconds
          for IUT to respond.

VERIFICATION: REF checks for valid code of 221.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out waiting for IUT to respond with a valid
response code. All connections are closed and test
ends.

===

Scenario FILE SERVICE

Scenario FILE_SERVICE tests the Server FTP IUT's ability to
correctly provide the following FTP file-oriented services:
Append, Allocate, Rename, List, Name List, Change Working
Directory, and Delete commands. The scenario also tests the
IUT's response to erroneous instances of all the above commands
except Allocate.

TEST 6: APPEND (APPE) COMMAND - EXISTING FILE

Does the IUT correctly respond to and implement the APPE command?

ACTION: REF sends the IUT the APPE command, giving as a
parameter the name of a file that is known to exist on
the remote system, and waits 60 seconds for the IUT to
respond. The test then checks that the append was
performed correctly.

VERIFICATION: REF checks for a valid code of 150 and 226, 125
and 226, 150 and 250, 125 and 250. A response code of
502 indicates the command is not implemented and the
test is not evaluated for success or failure.

SUCCESS: REF receives valid response codes and correctly
performs the append.

FAILURE: REF times-out before receiving valid response or does
not correctly perform the append.

TEST 7: APPEND (APPE) COMMAND - NONEXISTENT FILE

Does the IUT correctly respond to an APPE command having as its
parameter the name of a non-existent remote system file?

ACTION: REF sends the IUT the APPE command, giving as a
parameter the name of a file that is known to be non-

existent on the remote system (which should cause the IUT to create a file having that name), and waits 60 seconds for the IUT to respond. The test then checks that the new file was created.

VERIFICATION: REF checks for a valid code of 150 and 226, 125 and 226, 150 and 250, 125 and 250. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response codes and successfully creates the new file.

FAILURE: REF times-out before receiving valid response or does not create the new file.

TEST 8: ALLOCATE (ALLO) COMMAND WITHOUT RECORD OPTION

Does the IUT correctly respond to and implement the ALLO command without the record option?

ACTION: REF sends the IUT the ALLO command and waits 60 seconds for the IUT to respond. The test attempts to allocate an additional number of bytes of storage for a file to be stored on the recipient's host.

VERIFICATION: REF checks for a valid code of 200. A response code of 202 or 504 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 9: ALLOCATE (ALLO) COMMAND WITH RECORD OPTION

Does the IUT correctly respond to and implement the ALLO command with the record option?

ACTION: REF sends the IUT the ALLO command and waits 60 seconds for the IUT to respond. The test attempts to allocate a specific number of records for a file that will be stored as records on the remote system.

VERIFICATION: REF checks for a valid code of 200. A response code of 202 or 504 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 10:   RENAME FROM (RNFR) COMMAND

Does the IUT correctly respond to and implement the RNFR command?

ACTION: REF sends the IUT the RNFR command and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid code of 350. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 11:   RENAME TO (RNTO) COMMAND

Does the IUT correctly respond to and implement the RNTO command?

ACTION: REF sends the IUT the RNTO command and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid code of 250 or 200. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 12:   LIST COMMAND WITH FILE PARAMETER

Does the IUT correctly respond to and implement the LIST command, given a file name as a parameter?

ACTION: REF sends the IUT the LIST command, giving as a parameter the name of a file known to exist on the remote system, and waits 60 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid code of 125 and 226, 125
        and 250, 150 and 226, or 150 and 250. A response code
        of 502 indicates the command is not implemented and the
        test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 13:   **LIST COMMAND WITHOUT PARAMETER**

Does the IUT correctly respond to and implement the LIST command,
without a parameter?

ACTION: REF sends the IUT the LIST command without a parameter
        and waits 60 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid code of 125 and 226, 125
        and 250, 150 and 226, or 150 and 250. A response code
        of 502 indicates the command is not implemented and the
        test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 14:   **NAME LIST (NLST) COMMAND**

Does the IUT correctly respond to and implement the NLST command?

ACTION: REF sends the IUT the NLST command and waits 60 seconds
        for the IUT to respond.

VERIFICATION: REF checks for a valid code of 125 and 226, 125
        and 250, 150 and 226, or 150 and 250. A response code
        of 502 indicates the command is not implemented and the
        test is not evaluated for success or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 15:   **CHANGE WORKING DIRECTORY (CWD) COMMAND**

Does the IUT correctly respond to and implement the CWD command?

ACTION: REF sends the IUT the CWD command and waits 30 seconds
          for the IUT to respond.

VERIFICATION: REF checks for a valid code of 250 or 200. A
          response code of 502 indicates the command is not
          implemented and the test is not evaluated for success
          or failure.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 16:   DELETE (DELE) COMMAND

Does the IUT correctly respond to and implement the DELE command?

ACTION: REF sends the IUT the DELE command and waits 30 seconds
          for the IUT to respond.

VERIFICATION: REF checks for a valid code of 250 or 200. A
          response code of 502 indicates the command is not
          implemented and the test is not evaluated for success
          or failure. If a valid response is received, the REF
          tries to retrieve the same file to ensure it was
          deleted.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving a valid response.

TEST 38:   INVALID APPEND (APPE) COMMAND

Does the IUT respond correctly to an APPE command which cannot
open a data connection?

ACTION: REF issues an APPE command for which a data connection
          may not be opened and waits 10 seconds for the IUT to
          respond.

VERIFICATION: REF checks for a valid response code of 425
          indicating it cannot open a data connection.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response code.

TEST 39:   INVALID RENAME FROM (RNFR) COMMAND

Can the IUT respond correctly to the RNFR command which tries to rename a non-existent file?

ACTION: REF issues a RNFR command with a non-existent filename and waits for a valid response from the IUT.

VERIFICATION: REF checks for a valid response code of 450 or 550 indicating that the file is unavailable.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 40:   INVALID LIST COMMAND

Does the IUT respond correctly to an LIST command which cannot open a data connection?

ACTION: REF issues an LIST command for which a data connection may not be opened and waits 10 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 425 or 501 indicating it cannot open a data connection.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response code.

TEST 41:   INVALID NAME LIST (NLST) COMMAND

Does the IUT respond correctly to an NLST command which cannot open a data connection?

ACTION: REF issues an NLST command for which a data connection may not be opened and waits 10 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 500, 425, or 501 indicating it cannot open a data connection.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response code.

TEST 42: INVALID CHANGE WORKING DIRECTORY (CWD) COMMAND

Can the IUT respond correctly to the CWD command which tries to change to a non-existent directory?

ACTION: REF issues a CWD command with a non-existent directory
          and waits for a valid response from the IUT.

VERIFICATION: REF checks for a valid response code of 550
          indicating that the directory is unavailable.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 43: INVALID DELETE (DELE) COMMAND

Can the IUT respond correctly to the DELE command which tries to delete a non-existent file?

ACTION: REF issues a DELE command with a non-existent filename
          and waits for a valid response from the IUT.

VERIFICATION: REF checks for a valid response code of 550
          indicating that the file is unavailable.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

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Scenario CONN SERVICE

Scenario CONN_SERVICE tests the Server FTP IUT's ability to correctly provide the following FTP connection-oriented services: Reinitialize, Abort, Status, Site, and Remote Help commands. The scenario also tests the IUT's response to erroneous instances of the above commands.

TEST 17: REINITIALIZE (REIN) COMMAND

Does the IUT correctly respond to the REIN command?

ACTION: REF sends the REIN command and waits 30 seconds for the
          IUT to respond.

VERIFICATION: REF checks for a valid response code of 120 or 220. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 18:   ABORT (ABOR) COMMAND

Does the IUT correctly respond to the ABOR command?

ACTION: REF sends the ABOR command and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 225 or 226. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 19:   STATUS (STAT) COMMAND WITHOUT PARAMETER

Does the IUT correctly respond to the STAT command without any parameters?

ACTION: REF sends the STAT command without a parameter and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 211. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 20:   STATUS (STAT) COMMAND WITH DIRECTORY PARAMETER

Does the IUT correctly respond to the STAT command with a directory name as a parameter?

ACTION: REF sends the STAT command with the name of a known
remote system directory as the parameter and waits 30
seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 212. A
response code of 502 indicates the command is not
implemented and the test is not evaluated for success
or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 21: STATUS (STAT) COMMAND WITH FILE PARAMETER

Does the IUT correctly respond to the STAT command with a file
parameter?

ACTION: REF sends the STAT command with the name of a known
remote system file as the parameter and waits 30
seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 213. A
response code of 502 indicates the command is not
implemented and the test is not evaluated for success
or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 22: SITE COMMAND

Does the IUT correctly respond to the SITE command?

ACTION: REF sends the SITE command and waits 30 seconds for the
IUT to respond.

VERIFICATION: REF checks for a valid response code of 200. A
response code of 202 or 502 indicates the command is
not implemented and the test is not evaluated for
success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 23:   HELP COMMAND WITHOUT PARAMETER

Does the IUT correctly respond to the HELP command without a parameter?

ACTION: REF sends the HELP command with no parameters and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 211. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 24:   HELP COMMAND WITH PARAMETER

Does the IUT correctly respond to the HELP command with a parameter?

ACTION: REF sends the HELP command with a parameter and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for a valid response code of 214. A response code of 502 indicates the command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving valid response.

TEST 44:   UNIMPLEMENTED REINITIALIZE (REIN) COMMAND

Does the IUT respond correctly if the REIN command is not implemented?

ACTION: REF issues REIN command and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 502 indicating command is not implemented.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 45:   UNIMPLEMENTED ABORT (ABOR) COMMAND

Does the IUT respond correctly if the ABOR command is not implemented?

ACTION: REF issues ABOR command and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 502 indicating command is not implemented.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 46:   UNIMPLEMENTED STATUS (STAT) COMMAND

Does the IUT respond correctly if the STAT command is not implemented?

ACTION: REF issues STAT command and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 502 indicating command is not implemented.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 47:   UNIMPLEMENTED SITE COMMAND

Does the IUT respond correctly if the SITE command is not implemented?

ACTION: REF issues SITE command and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 202, 502, or 504 indicating command is not implemented.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 48:   INVALID HELP COMMAND

Does the IUT respond correctly if the HELP command is given an unknown parameter?

ACTION: REF issues HELP command with an unknown parameter and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 504 indicating command is not implemented for that parameter.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

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Scenario FILE XFER

Scenario FILE_XFER tests the Server FTP IUT's ability to correctly transfer files using the default file transfer parameters and various combinations of explicitly specified transfer parameters. These parameters are specified in the test descriptions below by a three character code: the first letter specifies the file Mode (S for Stream [Block and Compressed are not tested]), the second letter specifies the file Structure (F for File, R for Record [Page is not tested]), and the third letter specifies the file data Type (A for ASCII, E for EBCDIC, I for Image). The scenario also tests the IUT's response to erroneous instances of file transfer commands.

TEST 25:   FILE TRANSFER USING DEFAULT TRANSFER PARAMETERS (SFA)

Can the IUT perform the RETR and STOR commands correctly using the default transfer parameters (SFA)?

ACTION: REF sends the IUT the STOR command so that a file is transferred from the REF to the IUT and waits 30 seconds for IUT to respond. The following are valid responses: 150 and 226, 125 and 226, 150 and 250, or 125 and 250. If the REF does not receive a valid response from the IUT, the entire scenario is aborted. However, if the REF receives a valid response, it will then send the RETR command to transfer the test file back from the IUT. If the REF receives a valid response from the IUT to the RETR command, the file transfer has completed. To ensure the IUT performed the file transfer function correctly, the test file received from the IUT is compared to the original test file on the REF.

VERIFICATION: REF checks for valid response codes for RETR and STOR commands. File comparison ensures that the file data was not destroyed or altered while being transferred by or stored on the IUT.

SUCCESS: REF receives correct response codes for RETR and STOR commands. Successful file comparison to ensure correct file transfer.

FAILURE: Timeout occurs before receiving correct response codes for either RETR or STOR commands or unsuccessful comparison of files.

TESTS 26-31: FILE TRANSFER USING EXPLICIT TRANSFER PARAMETERS

These tests determine if the IUT can perform the RETR and STOR commands correctly using explicitly specified transfer parameters. Each test is identical except for the specific parameters used. In order, tests 26-31 use the following parameters: SFA, SFI SFE, SRA, SRI, SRE.

ACTION: Issue the appropriate MODE, STRU, and TYPE commands to establish the appropriate transfer parameters, checking for valid response codes of 200. Issue the STOR command so that a test file is transferred from the REF to IUT, checking for response codes of 150 and 226, 125 and 226, 150 and 250, or 125 and 250. When file transfer has completed, issue the RETR command so that the test file is transferred back to the REF, checking for the same response codes. When file transfer has completed compare the original REF test file to the file just received by the REF from the IUT.

VERIFICATION: REF checks for valid response codes as specified above and compares file to ensure correct data and file representation.

SUCCESS: For each test, a valid response is received by REF and file comparison is successful.

FAILURE: For each test, if a timeout occurs before receiving a valid response or an unsuccessful file comparison.

TEST 32: NO-OPERATION (NOOP) COMMAND

Can the IUT correctly respond to the NOOP command?

ACTION: REF sends the IUT the NOOP command.

VERIFICATION: REF checks for a valid response code of 200 within 30 seconds.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving a valid code.

TEST 49: INVALID STORE (STOR) COMMAND

Does the IUT respond correctly to a STOR command which cannot open a data connection?

ACTION: REF issues a STOR command for which a data connection cannot be opened and waits 10 seconds for the IUT to respond.

VERIFICATION: REF checks that a valid response of 425 is received indicating that a connection cannot be opened.

SUCCESS: REF receives correct response code.

FAILURE: REF times-out before receiving correct response code.

TEST 50: INVALID RETRIEVE (RETR) COMMAND

Does IUT respond correctly when asked to retrieve a non-existent file.

ACTION: REF issues a RETR command giving a non-existent filename and waits 10 seconds for a valid response from the IUT.

VERIFICATION: REF checks that a valid response of 550 is received from IUT indicating that the file specified does not exist.

SUCCESS: REF receives a valid response code.

FAILURE: REF times-out before receiving correct response code.

TEST 51: INVALID STRUCTURE (STRU) COMMAND

Can the IUT respond correctly to the STRU command given an unimplemented value?

ACTION: REF issues STRU command giving an unimplemented value and waits 10 seconds for a valid response from IUT.

VERIFICATION: REF checks for a valid response of 502 or 504 indicating that command is not implemented for that parameter value.

SUCCESS: REF receives correct response code.

FAILURE: REF times-out before receiving valid response code.

TEST 52: INVALID TYPE COMMAND

Can the IUT respond correctly to the TYPE command given an unimplemented value?

ACTION: REF issues TYPE command giving an unimplemented value and waits 10 seconds for a valid response from IUT.

VERIFICATION: REF checks for a valid response of 502 or 504 indicating that command is not implemented for that parameter value.

SUCCESS: REF receives correct response code.

FAILURE: REF times-out before receiving valid response code.

TEST 53: UNIMPLEMENTED MODE OPTION - BLOCK

Can the IUT respond correctly to the MODE command with the "block" option, if that option is unimplemented?

ACTION: REF issues MODE command giving the unimplemented "block" option and waits 10 seconds for a valid response from IUT.

VERIFICATION: REF checks for a valid response of 502 or 504 indicating the command is not implemented for that parameter value.

SUCCESS: REF receives correct response code.

FAILURE: REF times-out before receiving valid response code.

TEST 54: UNIMPLEMENTED MODE OPTION - COMPRESSED

Can the IUT respond correctly to the MODE command with the "compressed" option, if that option is unimplemented?

ACTION: REF issues MODE command giving the unimplemented
          "compressed" option and waits 10 seconds for a valid
          response from IUT.

VERIFICATION: REF checks for a valid response of 502 or 504
          indicating the command is not implemented for that
          parameter value.

SUCCESS: REF receives correct response code.

FAILURE: REF times-out before receiving a valid response code.

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Scenario NO LOGIN

Scenario NO_LOGIN tests the IUT's response to various commands
before the REF has logged in.

TEST 33:   STORE (STOR) COMMAND WHEN NOT LOGGED IN

Can the IUT respond correctly to the STOR command before the user
has logged in?

ACTION: REF User establishes a connection with the IUT but does
          not log in. The REF User issues a STOR command and
          waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for valid response of 530 from the IUT.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving a valid response code.

TEST 34:   INVALID USER COMMAND

Can the IUT respond correctly to an unknown username?

ACTION: REF issues a USER command to the IUT with an invalid
          username and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for valid response of 530 from the IUT.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving a valid response code.

TEST 35:   OUT-OF-SEQUENCE ACCOUNT (ACCT) COMMAND

Can the IUT respond correctly to a bad sequence of commands, with the ACCT command being out of sequence?

ACTION: REF issues an ACCT command out of sequence to the IUT and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for valid response of 503 from the IUT. A response code of 202 indicates the ACCT command is not implemented and the test is not evaluated for success or failure.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving a valid response code.

TEST 36:   OUT-OF-SEQUENCE PASSWORD (PASS) COMMAND

Can the IUT respond correctly to a bad sequence of commands giving the PASS command?

ACTION: REF issues a PASS command out of sequence to the IUT and waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for valid response of 503 from the IUT.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving a valid response code.

TEST 37:   INVALID PASSWORD (PASS) COMMAND

Can the IUT respond correctly to a correct username using the USER command, but an invalid password using the PASS command?

ACTION: REF issues a USER command with a valid username and if the IUT responds correctly, REF then issues a PASS command with an invalid password. REF waits 30 seconds for the IUT to respond.

VERIFICATION: REF checks for valid response of 530 from the IUT indicating user has not logged in correctly. User must then re-initiate login sequence.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out before receiving a valid response code.

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Scenario GEN ERROR

Scenario GEN_ERROR tests the IUT's response to commands with erroneous syntax.

TEST 55:   COMMAND SYNTAX ERROR

Can the IUT respond correctly to a syntax error in the command string?

ACTION: REF issues a misspelled NOOP command and waits 30
          seconds for IUT to respond.

VERIFICATION: REF checks for a valid response of 500 indicating
          a syntax error.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

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Scenario C FILE SERVICE

Scenario C_FILE_SERVICE tests the IUT's ability to contend with corrupted file service command sequences.

TEST 56:   APPEND (APPE) COMMAND CORRUPTION

Does the IUT respond correctly to an APPE command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer,
          issues an Append to the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 450 indicating
          the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 57: DELETE (DELE) COMMAND CORRUPTION

Does the IUT respond correctly to a DELE command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a DELE of the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 450 indicating the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 58: LIST COMMAND CORRUPTION

Does the IUT respond correctly to a LIST command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a LIST of the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 250 or 450, the latter indicating the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 59: NAME LIST (NLST) COMMAND CORRUPTION

Does the IUT respond correctly to an NLST command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Name List of the directory in which the file involved in the transfer resides.

VERIFICATION: REF checks for a valid response of 250 or 450, the latter indicating the file (directory) is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 60: RENAME COMMAND SEQUENCE CORRUPTION

Does the IUT respond correctly to file renaming commands during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Rename From of some file and, if that is successful, issues a Rename To of the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 450 indicating the file is busy. This response is not documented in MIL-STD-1780, but is the only response that seems to make any sense.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 61: RETRIEVE (RETR) COMMAND CORRUPTION

Does the IUT respond correctly to a RETR command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Retrieve of the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 450 indicating the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 62: RENAME FROM (RNFR) COMMAND CORRUPTION

Does the IUT respond correctly to a RNFR command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Rename From of the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 450 indicating the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 63:   RENAME TO (RNTO) COMMAND CORRUPTION

Does the IUT respond correctly to a RNTO command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Rename From of some file and a Rename To of the file involved in the transfer.

VERIFICATION: REF checks for a valid response indicating the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 64:   STORE (STOR) COMMAND CORRUPTION

Does the IUT respond correctly to a STOR command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a STOR to the file involved in the transfer.

VERIFICATION: REF checks for a valid response of 450 indicating the file is busy.

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 66:   VERIFCATION OF FILE TRANSFER VIA CHECKSUM (STOR)

After a successful file transfer (STOR) does a checksum of the file transfer compute correctly?

ACTION: REF stores a file at the IUT, then instruct REF and IUT to perform a checksum.

VERIFICATION: Checksum of each file is the same.

SUCCESS: Comparison checksums are the same.

FAILURE: REF times-out waiting for response from IUT or
          comparison checksums are different.

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Scenario C CONN SERVICE

Scenario C_CONN_SERVICE tests the IUT's ability to contend with
corrupted connection service command sequences.

TEST 65: ABORT (ABOR) COMMAND CORRUPTION

Does the IUT respond correctly to an ABOR command during a file
transfer?

ACTION: REF initiates a file transfer and, during the transfer,
         issues an Abort command.

VERIFICATION: REF checks for a valid response of 426, indicating
               the transfer was aborted abnormally and the data
               connection was closed, followed by a response of 226,
               indicating the abort was successful. A response of 502
               indicates the command is not implemented and the test
               is not evaluated for success or failure

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 67: HELP COMMAND CORRUPTION

Does the IUT respond correctly to a HELP command during a file
transfer?

ACTION: REF initiates a file transfer and, during the transfer,
         issues a Help command.

VERIFICATION: REF checks for a valid response of 211. A
               response of 502 indicates the command is not
               implemented and the test is not evaluated for success
               or failure

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 68: SITE COMMAND CORRUPTION

Does the IUT respond correctly to a SITE command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Site command.

VERIFICATION: REF checks for a valid response of 200. A response of 202 indicates the command is not implemented and the test is not evaluated for success or failure

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

TEST 69: STATUS (STAT) COMMAND CORRUPTION

Does the IUT respond correctly to a STAT command during a file transfer?

ACTION: REF initiates a file transfer and, during the transfer, issues a Status command with the name of the file being transferred given as a parameter.

VERIFICATION: REF checks for a valid response 213 or of 450, the latter indicating the file is busy. A response of 502 indicates the command is not implemented and the test is not evaluated for success or failure

SUCCESS: REF receives valid response from IUT.

FAILURE: REF times-out waiting for response from IUT.

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Scenario C FILE XFER

Scenario C_FILE_XFER tests the IUT's ability to transfer files from and to multiple REFs during simultaneous FTP sessions.

TEST 70:   FILE TRANSFER OVER MULTIPLE CONNECTIONS

Does the IUT correctly transfer files from and to multiple REFs during simultaneous FTP sessions?

ACTION: Three REFs establish command connections with the IUT and each of them in turn Stores a file to the IUT, Retrieves the same file from the IUT, and compares the initial file with the retrieved file.

VERIFICATION: Each REF checks for the appropriate responses to a standard Store-Retrieve sequence and checks if the file was correctly transferred to and from the IUT.

SUCCESS: REFs receive valid responses from IUT and files are transferred correctly.

FAILURE: REFs time-out waiting for responses from IUT, receive erroneous responses from IUT, or detect file transfer errors.

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Scenario C MULTI CONN

Scenario C_MULTI_CONN tests the IUT's ability to establish simultaneous FTP sessions with multiple REFs.

TEST 71:   ESTABLISH MULTIPLE COMMAND CONNECTIONS

Can the IUT correctly establish simultaneous FTP sessions with multiple REFs.

ACTION: Three REFs in turn establish command connections with the IUT and perform a login command sequence (USER, PASS, ACCT) to begin an FTP session.

VERIFICATION: Each REF checks that the IUT properly opens its command connection and checks for the appropriate IUT responses to the login commands.

SUCCESS: REFs receive valid responses from the IUT.

FAILURE: At least one REF times-out waiting for responses from the IUT or receives erroneous responses.

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Scenario THREE WAY

Scenario THREE_WAY tests the IUT's ability to function as a Server in a three-party file transfer. The third party, other than the REF User and IUT Server, is the REF Server.

TEST 72: THREE-WAY FILE TRANSFER

Does the IUT function properly as a Server in a three-party file transfer?

ACTION: A command connection is established between REF User and REF Server. Then a connection is established between REF User and IUT Server. If either of these connections cannot be established, the scenario is aborted (REF User has the ability to switch between the two connections). The test begins by sending the PASV command to the REF Server. It should respond with the response code 227 to indicate that it is listening for a data connection to be established to it, along with the data port number to which the other server should connect. Next, the REF User issues the RETR command to the REF Server so it knows its function when the data connection is established. It should respond with a code of 150. After the REF User receives this response, it switches to its connection with the IUT Server and issues the PORT command specifying the data port number received on the PASV response. The IUT should respond with the valid response code of 200. When the REF receives this code, it issues the IUT the STOR command so that a test file may be transferred from the REF site to the IUT site. This test completes one file transfer, but in order to verify that data was not destroyed or altered by the IUT server, the test file is transferred back to the REF and compared to the initial file.

VERIFICATION: REF checks for valid response codes from the IUT for the PORT command and the transfer commands and compares the transferred file with the original file to ensure data and file representation.

SUCCESS: REF receives correct response codes and successful comparison of files.

FAILURE: REF does not receive correct response codes or unsuccessful comparison of files.

TEST 73: QUIT COMMAND IN THREE-WAY CONTEXT

Does the IUT respond correctly to the QUIT command following a three-party transfer?

ACTION: After performing a three-party file transfer, REF issues QUIT command and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 221 indicating command was performed correctly.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.

TEST 74: UNIMPLEMENTED PASSIVE (PASV) COMMAND

Does the IUT respond correctly if the PASV command is not implemented?

ACTION: REF issues PASV command and waits 30 seconds for a valid response.

VERIFICATION: REF checks for a valid response of 502 indicating command is not implemented.

SUCCESS: REF receives valid response code.

FAILURE: REF times-out waiting for a valid response code.